

1	PROCESSES	34	COMPLETE APPARATUS ADAPTED FOR
2	AUTOMATIC POWER CONTROL		USE UPSIDE DOWN
3	.Motive power control	35	WITH DRIVE MEANS FOR TOOL OR
4	.Constant depth type		CLEANER
4.5	.Land leveller type	36	.Subsurface shears or nippers
5	.Obstruction sensing type (includes plant sensing)	37	.Tool rotated by attendant
6	..Electrical	38	.With obstruction feeling device for moving or releasing implement
7	.Draft responsive		
8	..Variable rate responsive	39	.With cleaner or comminutor spaced from ground surface
9	..With manual actuator to select type of condition sensed	40	.Vibrating tool
10	..Sensitivity adjustment	41	.Attendant supported tool
11	..With excess draft release	42	.Guided by walking attendant
12	..Overload lift type	43	..With ground support vertically adjustable relative to frame
13	LAWN EDGER	44	.Subsurface shaft or bar (e.g., rod weeder)
14	.With or convertible to non-earth working implement	45	.Flails
15	.Rolling or driven cutter	46	.Coaxial tools oppositely rotated
16	..With fixed cutter or furrower	47	.With specific relationship of mast-type hitch (i.e., three- point hitch) to implement
17	.With wheel or roller		
18	.Impact or grapple	48	.Plural driven tools
19	SOD CUTTER	49	..Contiguous cooperating or intermeshing rotary ground engaging tools
20	.With means for vertical transverse cutting while moving	49.5	...Rotating about vertical axes
21	LAWN AERATOR OR PERFORATOR, OR PLUG REMOVER	50	..Diverse tools
22	.Earth removing	51	...All rotary
23	DRIVEN FROM OR GUIDED BY STATIONARY OBJECT, OR ANCHORED	52	....Parallel axes
24	.Around tree or stake	53	...Rectilinearly reciprocating tool
25	.Rotatable about vertical axis	54	...Oscillating tool
26	.Guided by surface track or previously formed shoulder	54.5	..Tool reciprocates or oscillates within a generally horizontal plane
26.5	.Dragline scraper		
26.6	..Scraper part rearranged upon reverse movement	55	..Plural groups of disks
27	WITH MEANS FOR CUTTING OR SHREDDING PLANTS WITHOUT SOIL DISTURBANCE	56	..Staggered tools
28	.Driven	57	..Laterally spaced tools
29	WITH MEANS FOR SHIFTING SURFACE MATERIAL WITHOUT SOIL DISTURBANCE	58	...Longitudinal axes
30	.Driven shifting means	59	...Vertical axes
31	.Combined with rolling or vertically acting transverse cutter	60	...Transverse axes
32	WITH SEPARATING AFTER EARTH WORKING	61	.Intermittent drive for tool
33	WITH POWER DRIVEN MOLDBOARD, CONVEYER OR HANDLER	62	..With spring return
		63	.With non-driven tool (e.g., plow, harrow, drag, scraper, knife or roll, etc.)
		64	..Non-driven furrow opener and driven dam former
		65	..Interdigitating non-driven and driven tools

66	..Cooperating driven cleaner or comminutor and contiguous tool	94	...Blade oscillating arcuately or swivelly with respect to rotary carrier
67	..Driven comminutor at outlet of earth guide	95	...By cam or crank
68	..Rolling tool	96	..Blade flexible or with yieldable mount on carrier
69	...With tool drive from rolling tool	97	.Compound motion for tool (e.g., reciprocating and oscillating, reciprocating and rotating)
70	..Fore-and-aft non-driven tool	98	.Tool mounted for lateral shifting
71	..Non-driven tool follows path of driven tool	99	..About generally vertical axis
72	...Leveling drag or furrow shaper	100	.Blade on endless driven belt or chain
73	..Staggered driven and non-driven tool (e.g., cotton chopper, etc.)	101	.Tool guided for rectilinear reciprocation
74	.With power take-off from tool drive to adjust tool	102	..Tool moves in horizontal, transverse path
75	.Interconnected tool lift and drive control	103	.With overload relief or clutch in drive train (e.g., overload release, etc.)
76	.Implement with ground support for depth control	104	..Unidirectional clutch in drive from ground wheel
77	..Vertically biased implement	105	.Driven from rolling or driven ground wheel
78	..Vertically adjustable ground support	106	..Belt or chain drive
79	..Tool driven from prime mover on vehicle	107	.Tool driven about horizontal, longitudinal axis
80	.With wheel substitute (e.g., runner, etc.)	108	..Rotary driven tool
81	.With plant deflector or protector	109	...Adjustable tooth or blade
82	..Driven tool selectively shiftable along line of travel	110	.Tool driven about generally vertical axis (e.g., oscillating choppers, etc.)
83	..Tool drive interrupted by shifting tool	111	..Rotary driven tool
84	.Simultaneously reciprocating and oscillating blade having elongated shank	112	.With deflector or shield for thrown material
85	..Transverse chopping type	113	..Laterally directed outlet flow
86	...With plural cranks or cams driving each blade	114	.Specific propelling means
87	...Means for varying contour of path of blade	115	..Tool steers implement
88	..With plural cranks or cams driving each blade	116	..Tool propels implement
89	..Means for varying contour of path of blade	117	.Tool freely or yieldably mounted on chassis
90	.Irregular or off-center ground-engaging wheel or support	118	.Tool driven about axis transverse to draft line
91	.Blade movable with respect to cyclically driven carrier	119	..Screw or spiral rib, blade or tooth row
92	..With means for moving blade	120	..Disk or planar cutter (e.g., saw, etc.)
93	...Rectilinearly reciprocating blade	121	..Laterally extending bar or blade with skeleton support (e.g., lawn mower type, etc.)
		122	..Drum with teeth or blades
		123	..Rotary driven tool
		124	.Tool driven about diagonal axis

125	.Tool drive details	798	.Actuator for tilting wheel relative to vehicle frame
126	WITH EARTH MARKER	799	.Specific means for horizontally angling wheel relative to vehicle frame
127	.Marker shiftable on turning	799.5	TOWED SCRAPER WITH GROUND SUPPORT WHEELS
128	.Marker adjusted upon raising implement	133	DIVERSE TOOLS
129	.Ground wheel operated marker control	134	.One located in path of implement wheel
130	.Multiple interconnected markers	135	.One implement surrounds another
131	..Markers on laterally shiftable member	136	.Tools usable alternately only
132	.Marker swingable about longitudinal axis to both sides	137	.With means to vary spacing of tools upon turning
777	SCRAPER SUPPORTS NARROW DEPENDING TOOL	138	.With interconnected vertical adjustment
778	.Tool supporting clamp means engage upper and lower edges	139	..Plow and colter
779	SCRAPER POSITION AUTOMATICALLY CONTROLLED BY LINKAGE FOR LEVELLING	140	.With independent means for vertical movement
780	SCRAPER BETWEEN WIDELY SPACED FRONT AND REAR GROUND SUPPORTS	141	.Interconnected adjustment of horizontal angle of rolling and position of diverse tool
781	SCRAPER BETWEEN FRONT AND REAR GROUND SUPPORTS OF VEHICLE	142	.Including spring formed tool or standard
782	.With laterally offset inclined shoulder forming tool	143	.Including intermittently rolling tool
783	.With scraper attached ground support	144	.Colter, jointer and plow
784	.With diverse tool or portion	145	.Three or more diverse implements following same path (A, B, C, or A, B, A,)
785	..Non-scraping tool precedes and spaced from scraper	146	..Four or more
786	.Plural scrapers	147	...Alternately diverse (A, B, A, B)
787	..Spaced and in same path	148	..Longitudinally spaced like implements with intermediate diverse implement (A, B, A)
788	.Push frame for scrapers	149	..Including rolling tool
789	.Actuator for bodily shifting scraper subframe draft connection	150	...Smooth levelling roller
790	.Counterbalance means for scraper adjustment	151	...Diverse rolling
791	.Three or more independently operable scraper actuators	152	.At least four alternately diverse laterally spaced tools (A, B, A, B)
792	..Scraper adjustable about vertical axis of annular support	153	..Alternate rolling and non- rolling
793	...Actuator for laterally shifting support	154	..All rolling
794	.Spring biased into ground contact	155	.Laterally spaced like tools with intermediate diverse tool (A, B, A)
795	.Specific actuator between frame and scraper	156	..Spaced rolling with intermediate nonrolling
796	..For adjustment about vertical axis	157	..Spaced non-rolling with intermediate rolling
797	..For adjustment about longitudinal axis	158	..All rolling

159	..Spaced right and left hand tools with intermediate symmetrical tool	192	.Including horizontal knife or cutter
160	..Including spike tooth	193	.First tool with spaced trailing sweep
161	..Including implement alternating for right or left hand operation	194	..Sweep adjustable
162	..Reversal of implement adjusts diverse tool	195	.Second implement follows path of first
163	.Jointer and plow	196	..Including subsoiler
164	..Rolling jointer	197	..Teeth and scraper, leveller or drag
165	..Including colter	198	..Including teeth
166	..Rolling colter	199	..Including drag, scraper or levelling blade
167	.Fixed point or share with rotary moldboard	200	...Proceeded by implement of different type
168	.Rotating tool with fixed moldboard	201	.Laterally spaced
169	.Including tool rotatable about vertical axis	202	..Spaced from moldboard side of plow
170	.Including smooth levelling roller	203	...Connected to moldboard or handle
171	..Spaced from moldboard side of plow	204	ALTERNATING FOR RIGHT OR LEFT HAND OPERATION (OTHER THAN SCRAPER)
172	..With diverse rolling tool	205	.Draft revoluble on transverse axis
173	..With teeth	206	.Interrelated tool shift and lateral movement of draft member
174	.Rolling and non-rolling	207	..Draft member reversed
175	..Following same path	208	..Draft member latch control
176	...Furrowing or ridging implement followed by furrow or ridge roller	209	.Interrelated tool lift and shift
177	...Rolling tool has circumferentially spaced blades, tines or the like	210	..Mast type hitch
178	...Including disk gang	211	..Lift by ground support manipulation
179	...Non-rolling tool group with laterally co-extensive rolling tool	212	.Interrelated tool shift and ground support manipulation
180	...Rolling precedes non-rolling (same path)	213	.Tools oriented for movement in opposite directions
181	....Concave furrowing disk with trailing tool	214	..Wheeled frame with reversible draft member
182	..Laterally spaced	215	..Tilting beam
183	...With scissors or shearing action between adjacent faces	216	..Pivoted about spaced transverse axes, or translated
184	.Diverse rolling	217	..With movable deflector
185	..Spaced on same axis of rotation	218	.Shiftable moldboard
186	..Plane and dished disks	219	.Tool shifted for opposite throw
187	..Differing in size	220	..Reversible disk with reversible cleaner
188	.Runner attached	221	..Plural tools shifted about individual vertical axes
189	..Including fabric or flexible tool	222	...With translational movement of axes
190	..Including vertical, longitudinally oriented disc or blade (e.g., as stabilizer)	223	..Moldboard type shiftable about longitudinal axis
191	..Plural	224	.Axially rotatable implement

225	..With actuator	256	PROPULSION UNIT GUIDED BY WALKING ATTENDANT OR PART OF ARTICULATED VEHICLE
226	...Gearing		
227	....Chain or cable	257	.Riding attendant
228	.Parallel separate tools	258	.Endless track or single driven wheel
229	..Interconnected for simultaneous raising and lowering	259	.With vertically adjustable wheel
230	..Independently operable	260	.With actuator for moving earth working element vertically
231	...Power derived from ground wheel	260.5	HAVING TOOL OVERLOAD SHIFT CONTROLLED BY A FLUID PRESSURE DEVICE
232	.Oblique axis in longitudinal vertical plane		
233	WITH OBSTRUCTION FEELER FOR MOVING OR RELEASING IMPLEMENT TO AVOID OBSTRUCTION (INCLUDES DAM FORMER)	261	OVERLOAD SHIFTING
234	.Relatively movable	262	.Alternate tool brought into operation upon shift
235	..Latch releasing	263	.Actuator released
236	GROUND ENGAGEABLE DRAFT RESPONSIVE LEVER	264	.Against spring return device
237	.Roll over type implement	265	..Swinging about fixed pivot axis
238	GROUND SUPPORT MOVED VERTICALLY RELATIVE TO FRAME BY DRAFT MEANS	266	...Including toggle linkage
239	DRAFT, PITCH OR GROUND LEVEL RESPONSIVE DEPTH CONTROL	267	....Toggle adjustable
240	WITH GROUND SUPPORT ENGAGEABLE WITH GROUND FOR TRANSPORT ONLY	268	....Toggle links at acute angle
241	.Apparatus inverted to engage ground support with ground	269	.Resilient latch
242	.Implement tiltable on longitudinal axis	270	.Friction lock
243	.Tool changeable to or replaced by ground support	271	.Frangible lock (e.g., shear pin, etc.)
244	.Tool and ground support moved together relative to frame	272	WITH MEANS TO FACILITATE MOUNTING OF IMPLEMENT ON MOTOR VEHICLE
245	CONVERTIBLE; OR CHANGEABLE BY DISASSEMBLY OR ASSEMBLY	273	.Tool forward of rear of motor vehicle
246	.To land vehicle with body	274	.Implement has ground support
247	.To device classifiable in another class	275	.Self-coupling by horizontal movement
248	.To different type of hitch	810	MOUNTING FOR PUSHED TOOL AT END OF MOTOR VEHICLE
249	.Plural simultaneously usable tools to single tool	811	.Transversely mounted blade (e.g., bulldozer, etc.)
250	.Changeable by disassembly or assembly	812	..With valve or pump for hydraulic control system
251	..Tool changeable to diverse tool	813	..Fluid line specifically arranged, or shield for system component
252	...Tool plus added part forms diverse tool	814	..Having means controlling drive for interconnected vehicles
253	..Tool added or subtracted	815	..Contiguous, relatively adjustable blades; or blade having relatively adjustable earth-engaging parts
254	..Tool rearranged on support structure	816	..Blade mounting includes resilient connection
255	TURN LIFTS TOOL OFF OR LOWERS TOOL INTO GROUND	817	..Removable attachment for general purpose vehicle
		818	..Blade angle adjustable in a horizontal plane
		819	...Power-operated adjusting means

820	....Blade angled about fixed, central, generally vertical axis	292	SPECIFIC PROPELLING MEANS
821	.....And tilt of blade adjustable in a generally vertical plane	293	SERIES OF LIKE ELEMENTS
822	....And tilt of blade adjustable		SEQUENTIALLY OPERATED BY POWER CYCLE
823	...And tilt of blade adjustable	294	.Sequentially operated servo-motors
824	..Having adjustable tilt of angularly fixed blade	295	.Tool forward of rear of motor vehicle
825	...About a pivot axis fixed to mounting	296	.Shaft with spirally arranged projections
826	...Including adjustable length device between mounting means and upper corner portion of blade	297	TOOL FORWARD OF REAR OF MOTOR VEHICLE
827	..Having means to prevent lateral movement of mounting or blade	298	.With ground support
828	..With power means for raising and lowering blade	299	.Power actuator with cut-out or lock-out means
829	...Including elongated flexible element (e.g., cable) connecting power means to tool or mounting means	300	.With rearwardly mounted tool
830	...Power means is fluid servomotor	301	..Tools actuated by independent power units
831	....Plural servomotors	302	...Front and rear independent
832	..With blade-carried ground support	303	.Power actuator with manual adjusting or supplemental manual actuating means
833	.Tool prepares wheel path for passage of wheel	304	.Tools independently actuatable
834	.With tool-carried ground support	305	.With means for moving tool laterally
278	WITH WHEEL STEERING OR ACTUATOR FOR HORIZONTALLY ANGLING WHEEL AXIS	306	.Connected to front axle
279	.Implement part interconnected with motor vehicle steering means	307	.Parallelogram type lift
280	..Implement wheel steered	308	.With push bar
281	..Transverse tool bar laterally shiftable	309	.Pivoted on horizontal diagonal axis
282	.Wheel on trailing implement responds to turning movement	310	PLURAL WHEELED IMPLEMENTS
283	..Interconnected with adjustable tool	311	.Outrigged implement adjustable inwardly
284	..With additional angular adjustment of wheel	312	.Implement draft connection forwardly of rear of self-propelled vehicle
285	..Rear wheel turned or controlled	313	.Laterally spaced with separate draft tongues
286	.Wheel on non-propelled device	314	.Implements in echelon (e.g., gang plows, etc.)
287	..Wheel interconnected with tool	315	ACTUATOR ON TRAILING IMPLEMENT, CONTROLLED FROM PROPELLING VEHICLE
288	..Plural interconnected relatively movable wheels	316	.Servo-motor on implement
289	...Transversely aligned stub shafts	317	ACTUATOR ON VEHICLE FOR RELATIVELY MOVING PARTS OF TRAILING IMPLEMENT
290	..Swinging axle	318	.Actuator on vehicle moves implement ground support vertically relative to implement frame
291	..Wheel behind tool	319	..Interconnected means for moving hitch
		320	.Disk gang angling

321	ACTUATOR ON VEHICLE FOR MOVING WHEELED IMPLEMENT	353	..With body harness or engaging means
322	WITH ACTUATOR FOR ROCKING TOOL ABOUT WHEEL AXIS	354	..With wheel
323	..Unstable wheeled frame moved by actuator	355	...Alternately usable tools rocked about wheel axis
324	WITH ACTUATOR ON TRAILING GROUND SUPPORTED FRAME FOR MOVING DRAFT MEANS Laterally OR VERTICALLY	356	...Plural longitudinally spaced wheels
325	..Tool rigidly connected to tongue	357	...Handle forward of tool
326	..Vertically	358	...Tool forward of wheel
327	..With vertically adjustable ground support	359	...Tool and handle relatively vertically adjustable
328	...Interconnected means for adjusting draft means and ground support	360	..With wheel substitute (e.g., runner, etc.)
329	GUIDED BY WALKING ATTENDANT; SUPPORTED, PROPELLED, OR HELD IN POSITION BY ATTENDANT	361	..Handle connected to tool or runner
330	..With seat for moving hitch	362	..Tool standard connected to handle
331	..Hitch guided relative to supporting frame	363	..Plural handles associated with relatively adjustable tools
332	..Tool manipulated with respect to mounting frame	364	..Handle mounted tool adjusting, latching or locking mechanism
333	..Arched wheel frame (i.e., straddle row, etc.)	365	..Tool and handle relatively adjustable
334	...Seat counterbalanced beam	366	...Vertically
335	...With spring biasing means	367	..Multiple handles connected to multiple longitudinal tool carrying beams
336	....Spring biased upwardly during operation	368	..Plural handles connected to opposite sides of longitudinal beam
337	...Combined implement lift and wheel adjustment	369	...With brace member
338	...Tongueless, animal draft	370	..With attendant attaching means
339	....With balancing means	371	..Hand tool
340	...Multiple plant row type	372	..Adjustable
341	..With added intermediate tool	373	...Plural tools relatively adjustable
342	...Cross connected drag bars	374	....At least one tool immovably secured to handle
343	...Foot operated	375	..Alternately usable diverse tools or parts
344	..With support bracket for transport	376	..Loop type
345	..Manipulated about longitudinal axis	377	..Channel type
346	..Plural tools independently or oppositely manipulable	378	..Plural prongs, teeth or serrations
347	..Spring biased	379	...Plural rows
348	..Vertically manipulated	380	...Made from sheet material
349	..Rolling tool	381	..Non-planar earth working portion
350	..Handle swingably mounted on axis of tool	382	MULTIPLE LEVEL TOOLS
351	..Guided or propelled by walking attendant and with ground support or draft means	383	AXIS OF ROTATION OF WHEEL LOCKABLE OR ANGULARLY ADJUSTABLE
352	..With stepper propulsion means	384	..With actuator for tilting in a vertical plane
		385	..Adjustable stop

386	.Lockable against free swinging	418	..With actuator
387	WITH WHEEL SUBSTITUTE (E.G., RUNNER, ETC.)	419	...Screw jack type
388	.With wheel	420	...Rack and pinion or ratchet type
389	.Spring tooth implement	421	.Plural ground supports vertically adjustable relative to each other and the frame
390	..Parallel pivoted tooth bars	422	.Crank axle with angularly spaced wheel carrying arms
391	.Spike tooth implement	423	.With actuator
392	.Plural runner supported implements relatively movable during operation	424	..Spring assisted
393	.Spaced parallel runners with tool mounted therebetween	425	..Gearing
394	.Disk type tool	426	...Worm gear
395	WITH GROUND SUPPORT VERTICALLY ADJUSTABLE RELATIVE TO FRAME	427	...Screw jack type
396	.Vertically adjustable or selectively lockable hitch	428	...Rack and pinion or ratchet type
397	.Tool land ground support moved together relative to frame	429	..Manually operated lever rigid with crank axle
398	..Linkage to tool	430	WITH INDICATING OR SIGHTING MEANS
399	.With power take-off from plural wheels	431	WITH SEAT OR ATTENDANT'S STATION
400	.Actuator and interconnected means for adjusting wheels on different axles	432	.Plural
401	..Three or more adjustable wheels on different axles interconnected	433	.Riding attachment
402	...With power take-off from self- adjusted wheel	434	.Movable to non-use position
403	..With power take-off from wheel	435	.Operator changes position or seat adjustable
404	...Wheel adjusted by own power	436	.Mounted on transverse member connecting plural implements
405	..One wheel translates another swings	437	WITH TOOL SHARPENER
406	..With additional actuator changing relative position of wheels	438	COMBINED
407	.Power operated adjustment	439	MAST TYPE HITCH (E.G., THREE POINT HITCH, ETC.)
408	..Wheel actuates its crank axle mount	440	.Angled gangs liftable as a unit
409	...Wheel lockable to crank axle arm	441	..Tandem gangs
410	...Intermittently rotatable member swingable with crank	442	...With actuator for angling groups relatively
411	...."Constant height" depth adjustment	443	.Struts on trailer or between implement parts
412	...Swingable arm engageable with wheel	444	.Hitch quadrilateral modified during lift
413	..Servo-motor adjusting means	445	.With means operated by vertical hitch movement
414	.Flexible or lost motion connection to actuator	445.1	.Including blade, scraper, or smoother
415	.Translating motion	445.2	..Angularly adjustable about vertical axis
416	..One ground support translates and another swings	446	.Laterally adjustable tool
417	..Parallel links	447	..Rockable about vertical axis
		448	.With auxiliary vertical adjustment
		449	.Tool movable relative to mast while earth working
		450	.Sway limiting means or swayable tool
		451	.With tool frame or bar extending beyond sides of vehicle

452	WITH ACTUATOR ADAPTED TO LIFT TOOL FOR TRANSPORT ON WHEELED FRAME OR BROADLY CLAIMED IMPLEMENT	475	..Plural longitudinally spaced actuators
453	.Actuator electrically powered	476	.With lateral adjustment
454	.Angled gangs lifted as a unit	477	..Tool adjustable about vertical axis
455	..Tandem gangs	478	.Tool and lift actuator on opposite sides of transverse pivot axis
456	.Central group liftable vertically, side groups movable inwardly	479	.Tool lifted forward of transverse pivot axis
457	.With means to restrain lateral sway when raised	480	.Tool swung about freely shiftable or delayed pivot
458	.Vertical movement interrelated with another	481	.With separate latch
459	.Pivotable about longitudinal axis (e.g., lateral levelling, etc.)	482	.Tool swings about rock shaft axis
460	..Tool independently vertically adjustable at transversely spaced points	483	.Translatable tool
461	.Tool lifted with respect to stationary or relatively movable cleaner	484	..By parallel links
462	.Plural tools, individually spring biased down, lifted as unit	485	.Power actuator with manual adjusting or supplemental manual actuating means
463	.Lift actuator moves with tool or forms removable unit therewith	486	..Manual actuation coextensive with power
464	.Servo-motor forces tool down	487	..Constant height depth adjustment
465	.Servo-motor with follow-up control (e.g., motion responsive position control, etc.)	488	.Single lift actuator for plural relatively movable tools
466	.Tool held raised for relieving load on servo-motor	489	..Tools relatively moved during lift
467	.With shiftable hitch causing vertical movement	490	.Rotary drum actuator
468	.Plural tools, independently actuatable	491	.Servo-motor actuator
469	..By single selectively connectable actuator	492	.With power take-off for actuator
470	..With separate actuator for concurrent lift or with interlock	493	..Position controlled power disengagement
471	..Three or more independent actuators	494	.Overcenter or toggle holding means
472	.Plural tools simultaneously raised, individually lowered	495	.Foot operated actuator
473	.Tool differentially or sequentially lifted at longitudinally spaced points	496	..With combined or optional hand actuation
474	.Tool rocked about independently vertically adjustable transverse axis	497	.Tool spring biased during operation
		498	..Biased to neutral position
		499	..Spring means alternately biases tool in opposite directions
		500	..Tool spring pressed downwardly
		501	.Lost motion connection between actuator and tool
		502	..Flexible connector
		503	.Actuator slidably connected to tool
		504	.Screw actuator
		505	.Tool connected to frame by bail
		506	.Spring assisted or spring actuator
		507	GROUND SUPPORT MOVABLE HORIZONTALLY

508	WITH GUARD, SHIELD OR PLANT DIVERTER	543	..Spring tooth or blade
509	.Fender for deflected earth	544	..Spring moving or mounting means for tooth or blade
510	..Rotary	545	..Blades or teeth change position relative to each other or rotating support during rotation
511	..Perforated or screening type	546	...With means for causing movement
512	..Inverted U-shape	547	..With cleaning means
513	..Laterally spaced fenders for inwardly thrown earth	548	..Tooth or blade units on single axle
514	.Weed turner or trash holddown	549	...Tooth or blade units angularly adjustable on axle
515	..Spring biased or spring formed	550	..Tooth or blade adjustable on carrier
516	...Plural cooperating elements	551	..Rolling tool spring biased into ground contact
517	.Plant deflector	552	..Laterally extending bar or blade with skeleton support (e.g., lawn mower type, etc.)
518	ROLLING, ROTATING OR ORBITALLY MOVING TOOL	553	...Toothed bar or blade
519	.Yieldable material rim (e.g., rubber, etc.)	554	..Drum with axially spaced teeth or blades
520	.Tools on different axes in mutual driving relationship	555	..Integral disk
521	.With power take-off from tool or wheel	556	..Tooth or blade axially clamped to hub face (e.g., hoe wheel type, etc.)
522	.Axis substantially vertical	557	.Rim with spokes
523	..With vertically extending teeth	558	.With disk cleaning means
524	...Positioning means engaging circumference	559	..Rotatably mounted cleaning means
525	...With weight	560	..Cleaner for pair of converging disks
526	...Plural tools	561	..Cleaners for opposite sides of disk
527	.Axis substantially longitudinal	562	..Plural cleaners for single disk
528	.With means for stopping or retarding rotation	563	..Cleaners with common operator
529	..Positive stop	564	...Mounted on rock shaft
530	...Wheel or motor controlled	565	...Operating means moves parallel to disk gang axis
531	.Wobble discs	566	..Spring biased toward disk
532	.Screw or spiral	567	.Disk gang and single disk on diverse axes
533	.Clutch between shaft and rotating element	568	.Disk gang with movable or removable section
534	.Wheel or roller with peripherally spaced plant saving means	569	.Disks pivoted on vertical axes with interconnected means for moving them indentially
535	.Detachable rim for disk	570	.With spring means other than for detent
536	.Wheel, roller or gauge and axially adjacent tool on same axis	571	..Spring is for tool group horizontal angling
537	.Corrugated surface rollers	572	..Spring acts to move tool vertically
538	.Paired press rims (e.g., planter press wheels, etc.)		
539	.Smooth roller with groove, rim or disk		
540	.Tool has circumferentially spaced teeth, tines, blades or the like		
541	..With means for preventing ground engagement of teeth or blades		
542	..Tooth or blade on endless carrier		

573	...Plural tools, individually spring urged	609	.For plural tools
574	.Plural disks with individual mount or axis	610	.Scraper
575	..Touching disks	611	WITH WEIGHT
576	..With interconnected means for adjusting a plurality of disks	612	FABRIC OR FLEXIBLE TOOL
577	.Reversible group	613	PLURAL RELATIVELY MOVABLE TOOLS
578	.With wheel (not on motor vehicle)	614	.Tool pivots on pivoted member when member moves
579	.Plural groups of disks	615	..Tools connected to parallel pivoted bars
580	..Power operated actuator	616	...Bars pivoted about vertical axis
581	..Groups changeable to different types of arrangements	617	....Also pivoted about horizontal axis
582	..With independent lateral adjustment	618	.Tools assume different angularity for opposite draft
583	..Vertically adjustable group	619	.Plural tool groups relatively vertically movable because of operation
584	..Horizontally angularly adjustable group	620	..Parallel transverse tooth bars
585	...Groups of unequal length	621	...Spring biased bars
586	...More than two laterally positioned groups	622	...With actuator to vary inclination of teeth
587	...Groups laterally spaced and unaligned	623	..Groups abreast and in tandem
588	...Hitch longitudinally movable on tongue and groups abreast	624	..Plural groups movably connected to forward transverse draft bar
589	...Turning connection offset from draft connection	624.5	...With parallelogram-type linkage
590	....Latch responsive to tractor motion	625	...With alternate draft means (spaced 90 degrees)
591	...With manual actuator	626	...Sectional draft bar
592	....Concentric controls	627	...Groups also connected to one another
593	....Separate handles for independent gang adjustment	628	..Similar groups arranged to form a triangular shape
594	....Double tandem groups	629	..Three or more laterally spaced groups
595	...Double tandem groups	630	..Groups pivoted to opposite sides of longitudinal draft member
596	...Tandem groups	631	..Groups movable about common longitudinal axis
597	....Toggle joint between groups	632	..Group movable about oblique horizontal axis
598	...Thrust means directly between group axles	633	..Group pivotal about intermediate transverse axis
599	.Disk gang	634	.Parallel, pivotally adjusted tool bars
600	..Supported for tilting and horizontal angling adjustment	635	..With actuator
601	..Disks rotatable relative to axle	636	...Tools also adjustable about vertical or longitudinal axes
602	.Single disk freely swayable	637	...Plural actuators, independently pivoted tool bars
603	.Disk horizontally angularly changeable	638	...Gear
604	.Detailed disk structure per se		
605	SHIFTABLE HITCH MOVES TOOL RELATIVE TO FRAME		
606	WITH CLEANER		
607	.Cleaner surrounds tooth		
608	.Clearing roller		

639	..Specific mounting for pivoted tool bar	669	WITH WHEEL; OR SUPPORTED ON WHEEL FRAME OR BROADLY CLAIMED IMPLEMENT
640	.Tool group pivotally adjustable about horizontal axis	670	.All wheels on one side of tool
641	.Beam spreader of the pivoted yoke type	671	.Mounted on single longitudinal beam in tool path
642	.Pair of tools cooperate to move earth to or from plant row	672	..Wheel secured to tool
643	.Spring formed tool or standard	673	.Laterally adjustable tool
644	.Tools longitudinally adjustable to and from transverse alignment	674	.With bracket to hold tool off ground
645	.Tools relatively adjustable horizontally without causing vertical displacement	675	.Vertically adjustable tool
646	..Laterally adjustable tools, independently free to move vertically	676	.Tool follows wheel path
647	..Tools simultaneously adjustable about their individual, spaced vertical axes	677	WITH DRAFT DETAIL
648	..Collapsible lazy tong group	678	.Spring biased hitch
649	..Tool groups relatively horizontally adjustable	679	.Adjustable
650	...Also vertically adjustable	680	..Vertical
651	...Group pivoted about vertical axis	681	TOOL, STANDARD OR CONNECTION
652	....V-shaped	682	.Tool flexed to change contour
653	.....Nested	683	.Latched in earth working position
654	..Main central beam, tools laterally adjustable relative thereto	684	.Tool pivots on member when member moves
655	..Tool adjustable vertically and laterally	684.5	.Frame-supported blade, scraper, or smoother drawn by vehicle
656	..Tool laterally adjustable	685	.Plural tools
657	.Relatively movable because of operation	686	..Right and left hand type
658	..With interconnecting means to prevent independent lateral movement	687	..Longitudinally spaced rows
659	.Adjustable about spaced horizontal axes	688	...Staggered
660	..Concurrent adjustment	689	..Closed geometrically shaped frame
661	.Vertically translatable tool	690	..V-shaped frame
662	.Tool movable to non-use position	691	..Mounted on transverse or oblique tool bar
663	WITH ACTUATOR	692	...Angularly adjustable bar
664	.For relatively movable earth engaging parts	693	...Oblique bar
665	..Tool and runner	694	..Laterally spaced tools
666	.For adjustment about longitudinal axis	695	...Tools in echelon (3 or more)
667	.For lateral adjustment	696	...Tools on opposite side of longitudinal beam
668	.For vertical adjustment with respect to wheeled frame	697	...Tools in transverse alignment
		698	.Tool with laterally spaced standards
		699	.Subsoilers
		700	..With separate vertically spaced earth working portion attached to same standard
		701	.Ridgers
		701.1	.Tool is transversely elongated blade (e.g., bulldozer)
		701.2	..Having removable corner bit
		701.3	..Having removable cutting edge
		702	.Reversible part
		703	..Earth engaging means

704	...Portion of earth engaging assembly	736	..Relatively adjustable earth engaging parts
705	.Spring biased or formed tool or tool part	737	...Element adjusted for wear compensation
706	..Plural earth engaging parts relatively movable during operation	738	...Relatively adjustable tool and runner
707	..Spring formed tool or standard	739	..Adjustable about horizontal transverse axis
708	...With separate or rigid earth working portion	740	...Tool adjustably connected to standard
709	..Laterally biased	741	..Laterally adjustable
710	..Pivoted tool biased beyond pivot	742	...Adjustable about a vertical axis
711	..Leaf or torsion spring	743	...Adjustable about a longitudinal axis
712	..Tool assumes different position for opposite draft	744	..Vertically adjustable
713	..Tooth	745	.Welded
714	..Plural earth engaging parts relatively movable because of operation	746	.With portion extended beyond landslide
715	..Rotary landslide	747	.Specific material
716	..Movable moldboard for inverting furrow slice	748	.Pivoted tool
717	...Belt	749	.Having separable parts interconnected without detachable fastening means
718	...Roller	750	..Self-engaging snap fastener
719	.With add-on cutting or wearing element applied directly over, or onto, the original cutting element	751	..Captive fastener or wedge tightened or engaged after assembly
720	.Subsurface blade (e.g., weeder, etc.)	752	.With separable vertical planar longitudinal cutter (e.g., colter, etc.)
721	.Non-rectangular, symmetrical type	753	.Interlocked or interfitted parts
722	..Earth breaking part and separately attached wings	754	.Share and furrow slice inverting moldboard
723	...Draw cut point	755	..Heating or lubricating
724	...Wings integral	756	..Skeleton
725	..With separable vertical cutter on centerline	757	..Furrow slice retainer
726	..Having separable parts jointed at centerline	758	..Furrow slice cutter or breaker
727	..With attached runner or depth gauge	759	..With additional element juxtaposed to moldboard
728	...With additional blades attached to runner	760	..Specific moldboard shape
729	...Adjustable	761	..Serrated, toothed or notched point or share
730	..Winged	762	.Specific tool and standard connection
731	..Lateral extent decreases upwardly	763	.Specific standard and beam connection
732	..Triangular blade	764	.With separate runner, gauge, shoe or landslide
733	..Constant height and V-shape	765	.Specific tool shape
734	.Adjustable	766	..Tool with parallel fingers or blades
735	..To present different working portion	768	..Draw cut type
		769	..Separable parts
		770	..Angularly related tool surfaces

- 771 ..With curved surface
- 772 .Removable tool portion (e.g.,
replaceable cutting or wearing
element for tool)
- 772.5 ..Portion is cutting edge
- 773 .Specific standard
- 774 ..With lateral offset
- 775 ..Braced
- 776 **MISCELLANEOUS (E.G., FRAMES,
ETC.)**

CROSS-REFERENCE ART COLLECTIONS

900 PLANT THINNERS

FOREIGN ART COLLECTIONS

FOR 000 CLASS-RELATED FOREIGN DOCUMENTS